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AD

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/281,831	03/30/99	TAI Y	06618/425001

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EXAMINER	
PEREZ,G	
ART UNIT	**PAPER NUMBER**
2834	

DATE MAILED: 10/05/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/281,831	Applicant(s) TAI ET AL.	
	Examiner Guillermo Perez	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 September 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1 to 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brailsford (U. S. Pat. No. 4,475,068) in view of Posey (U. S. Pat. No. 5,293,523) and further of Bornand (U.S. Pat. No. 5, 605, 614) in view of Tai et al. (U. S. Pat. No. 6,094,116).

Brailsford discloses a DC motor (Figures 2 and 3) comprising:

a plurality of windings (21-24);

at least one magnetostatic relay (37-38) positioned in the motor to activate in the presence of a magnetic field, such that the magnetostatic actuation force causes the magnetic actuation plate to align itself with the magnetic field (see abstract lines 4-8), where each relay (37-38) is connected electrically to at least one corresponding winding (21-24) and to power.

Brailsford discloses a magnetic four-pole rotor (31) having at least one pole (32-35) positioned to induce a magnetic field in each magnetostatic relay (37-38) when passing by the relay (37-38).

Brailsford discloses that the windings (21-24) are arranged in pairs of primary and secondary windings (21-22 and 23-24) and each relay (37-38) connects to a corresponding one of the pairs of windings (21-24).

Brailsford discloses that the secondary windings (21 and 23) all connect to a common node (41) and each of the primary windings (22 and 24) connects to the corresponding relay (37-38).

However, Brailsford does not disclose at least one microelectronic mechanical system (MEMS) relay positioned in the motor ~~to activate in the presence of a magnetic field~~, where each relay has a first substrate formed from a nonconductive or semiconductive material. Brailsford does not disclose a magnetic actuation plate micro-machined on the first substrate, the magnetic actuation plate having a first conductive surface. Brailsford does not disclose a second substrate provided adjacent to the magnetic actuation plate, the second substrate having a nonconductive surface and a second conductive surface. Brailsford does not disclose a springing beam etched on the substrate. Brailsford does not disclose two electrically conductive elements, one formed on the springing beam.

Brailsford does not disclose that the springing beam includes a magnetic material. Brailsford does not disclose that the first and second conductive surfaces/elements define at least two switching states, including an open state in which the conductive surfaces/elements are physically separated from each other, and a closed state in which the conductive surfaces/elements physically contact each other. Brailsford does not disclose the magnetic material actuation plate, in the presence of a

magnetic field, creates an actuation force that causes the electrically conductive surfaces to switch from one of the switching states to another of the switching states. Brailsford does not disclose that the magnetic actuation plate/springing beam is formed with permalloy material to provide high plating capability.

Posey discloses a relay having:

at least one substrate (48) formed from a nonconductive or semiconductive material (column 5, lines 16 to 19);

a springing beam (42) formed on the substrate (48); and

two electrically conductive elements (42 and 44), one formed on the springing beam (42), that together define at least two switching states, including an open state in which the conductive elements are physically separated from each other (figure 3A), and a closed state in which the conductive elements physically contact each other (figure 3B).

Posey discloses that the springing beam (42) includes a magnetic material (50) which, in the presence of a magnetic field, creates a magnetostatic actuation force that causes the electrically conductive elements to apply power to or remove power from at least one of the windings by switching from one of the switching states to another of the switching states. Posey's invention have the purpose of avoiding an undesirable change in the magnetic flux field, which renders the switch insensitive to the proximateness of the permeable target object.

Bornand discloses at least one microelectronic mechanical system (MEMS) relay (figure 1) which is activated under the presence of a magnetic field (16). Bornand

discloses a magnetic actuation plate (14) micro-machined on a first substrate, such that a magnetostatic actuation force causes the magnetic actuation plate to align itself with the magnetic field (column 4, lines 38-43), the magnetic actuation plate having a first conductive surface (12, 13); and

Bornand discloses a second substrate (1) provided adjacent to the magnetic actuation plate, the second substrate having a nonconductive surface and a second conductive surface (9, 10); and

a springing beam (5) etched on the substrate.

Bornand discloses two electrically conductive elements (12, 13, 2, 11), one formed on the springing beam (12, 13), that together define at least two switching states. Bornand discloses that the springing beam includes a magnetic material (14). Bornand's invention have the purpose of miniaturizing the electrical circuits to be opened and closed in an electrical system.

Tai et al. disclose that the magnetic actuation plate (6) comprises one or more anchors (1) in direct contact with the first substrate (2). Tai et al. disclose that the magnetic actuation plate/springing beam (6) and the anchors are formed with permalloy material (column 5, lines 12-17). The invention of Tai et al. have the purpose of providing a high magnetic permeability in the magnetic circuit.

It would have been obvious at the time the invention was made to modify the DC motor of Brailsford and provide it with the substrate, the springing beam and the two electrically conductive elements as disclosed by Posey. Also would have been obvious to provide the DC motor of Brailsford with the at least one microelectronic mechanical

system (MEMS) relay, the magnetic actuation, the second substrate, the springing beam etched on the substrate and the two electrically conductive elements disclosed by Bornand. Also would have been obvious to provide the DC motor of Brailsford with the material disclosed by Tai et al. for the purpose of avoiding an undesirable change in the magnetic flux field, which renders the switch insensitive to the proximateness of the permeable target object and miniaturizing the electrical circuits to be opened and closed in an electrical system and actuating the springing beam.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the magnetic actuation plate/springing beam and anchors of a permalloy material since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

2. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brailsford in view of Posey and further of Bornand in view of Tai et al. as applied to claim 1 above, and further in view of Tanikoshi (U.S. Pat. No. 3, 900, 780).

Brailsford, Posey, Bornand and Tai et al. disclose a DC motor as described on item 1 above. However, neither Brailsford, Posey, Bornand nor Tai et al. disclose that the motor is a three-phase motor. Neither Brailsford, Posey, Bornand nor Tai et al. disclose that the motor includes three relays separated from each other by approximately 120°.

Tanikoshi discloses that the motor is a three-phase motor (figure 7); and that

the motor includes three relays separated from each other by approximately 120° (column 5, lines 40-49) for the purpose of controlling with a higher degree of accuracy the switching operations of the magnetic - sensitive elements.

It would have been obvious at the time the invention was made to modify the DC motor of Brailsford, Posey, Bornand and Tai et al. and provide it with the three-phase motor including the three relays arrangement disclosed by Tanikoshi for the purpose of enhancing the switching operations of the relays during rotation of the motor rotor.

Response to Arguments

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
October 3, 2001

ELVIN ENAD
PRIMARY EXAMINER
AU 2834
10/4/01